

REMARKS/ARGUMENTS

By this Amendment, claims 1 and 2 have been cancelled, claims 3-12 have been amended and claims 13-20 have been added. Claim 4 has been withdrawn from consideration. Accordingly, claims 3-20 are pending in the present application.

The objections to claims 6 and 9 are noted. In response, claims 6 and 9 have been amended so as to provide proper antecedent basis for all claim elements.

Claim 6 stands rejected under 35 U.S.C. §112, second paragraph. In response, claim 6 has been amended to be in full compliance with all §112 requirements. Accordingly, withdrawal of this rejection is respectfully requested.

Claim 1 stands rejected under 35 U.S.C. §102(b) as being anticipated by Isoda (JP 501). Claims 1 and 7 stand rejected under 35 U.S.C. §102(b) as being anticipated by Megro (JP 502) or Fukazawa (JP 448). Claim 1 stands rejected under 35 U.S.C. §102(e) as being anticipated by Lithgow (U.S. Patent No. 6,083,883). With the cancellation of claim 1, and the amending of claim 7 to be dependent upon claim 3, these rejections are deemed moot.

Applicants wish to note that the present application was filed in the United States on May 24, 2001. Thus, the statement made on page 4 of the Office Action that the changes made to 35 U.S.C. §102(e) by the American Inventors Protection Act of 1999 do not apply to the examination of this application is incorrect. Therefore, this application must be examined under 35 U.S.C. §102(e) after the amendments made by the AIPA.

Claims 8-12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Lithgow or Isoda in view of Tada, et al. (U.S. Patent No. 6,008,707). Applicants respectfully traverse this rejection.

Among the limitations of independent claims 8-12 which are neither disclosed nor suggested in the prior art of record is an inner conductor which has "a multi-layer

electrode structure in which conductor layers and dielectric layers are alternately laminated and wherein an outermost conductor layer of the inner conductor is greater in thickness than the other conductor layers of the inner conductor.”

As admitted on page 5 of the Office Action, neither Lithgow, nor Isoda, either alone or combined, teach or suggest that the inner conductor is formed by alternately laminating conductor layers and dielectric layers.

Tada, et al. does not remedy any of the deficiencies of Lithgow and/or Isoda. Nowhere within Tada, et al. is it disclosed, let alone suggested to place a columnar element in a hole within a dielectric element, let alone providing an inner conductor having a multi-layer electrode structure in which conductor layers and dielectric layers are alternately laminated and an outermost conductor layer is greater in thickness than the other conductor layers, as required by each of independent claims 8-12.

Accordingly, even if one were to combine the teachings of Lithgow, Isoda and/or Tada, et al., one would not arrive at the coaxial resonators defined in independent claims 8-12. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

Claims 3, 5, 6 and 7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Lithgow or Isoda in view of U.S. Patent No. 6,148,221 to Ishikawa, et al. Applicants respectfully traverse this rejection.

Among the limitations of independent claim 3 which are neither disclosed nor suggested in the prior art of record is a coaxial resonator which includes an inner conductor having “a multi-layer electrode structure in which conductor layers and dielectric layers are alternately laminated and wherein an outermost conductor layer of the inner conductor is greater in thickness than the other conductor layers of the inner conductor.”

As admitted on page 5 of the Office Action, neither Lithgow, nor Isoda, either alone or combined, teach or suggest that the inner conductor is formed by alternately

laminating conductor layers and dielectric layers.

Ishikawa, et al. does not remedy any of the deficiencies of Lithgow and/or Isoda. Nowhere within Ishikawa, et al. is it disclosed, let alone suggested to form a multi-layer electrode structure in which an outermost conductor layer is greater in thickness than the other conductor layers as required by independent claim 3. In fact, inasmuch as Ishikawa, et al. teaches that all of the conductive layers are the same thickness, it teaches away from the present invention as defined in independent claim 3. Accordingly, it is respectfully submitted that independent claim 3 patentably distinguishes over the art of record.

Claims 5, 6 and 7 depend either directly or indirectly from independent claim 3 and include all of the limitations found therein. Each of these dependent claims include additional limitations which, in combination with the limitations of the claims from which they depend, are neither disclosed nor suggested in the prior art of record. Accordingly, claims 5, 6 and 7 are likewise patentable.

Claims 1, 3 and 5-12 have been provisionally rejected under the judicially created doctrine of obviousness-type double patenting a being unpatentable over claims 1-12 of co-pending application Serial No. 09/707,264 in view of Lithgow or Isoda. Applicants respectfully request that this provisional obviousness-type double patenting rejection be held in abeyance until final resolution of the other issues remaining in this application.

New claims 13-20 have been added to more fully cover the scope of the present invention. Consideration and allowance of these claims is respectfully requested.

Claim 4 was previously withdrawn from consideration in a species Restriction Requirement. As claim 4 depends from allowable generic claim 3, it is respectfully requested that claim 4 be considered and allowed along with the other pending claims in the present application.

The prior art made of record and not relied upon has been carefully reviewed. It is believed that these references, either alone or combined with any other references of record, do not render the pending claims unpatentable.

In view of the foregoing, favorable consideration of the amendments to claims 3-12, favorable consideration of new claims 13-20 and allowance of the application with claims 3-20 is respectfully and earnestly solicited.

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Respectfully submitted,

By Richard LaCava

Richard LaCava

Registration No.: 41,135

DICKSTEIN SHAPIRO MORIN &
OSHINSKY LLP

1177 Avenue of the Americas

41st Floor

New York, New York 10036-2714

(212) 835-1400

Attorneys for Applicant

Appendix A

Version With Markings to Show Changes Made

3. (Amended) A coaxial resonator [according to Claim 1,] comprising:
an inner conductor formed on an outer surface of a columnar element;
a dielectric element having a hole formed therein, the columnar element being
disposed in the hole; and
an outer conductor formed on an outer surface of the dielectric element,
wherein [said] the inner conductor has a [thin-film,] multi-layer electrode
structure in which [thin-film] conductor layers and [thin-film] dielectric layers are
alternately laminated and wherein an outermost conductor layer of the inner conductor is
greater in thickness than the other conductor layers of the inner conductor.
4. (Amended) The [A] coaxial resonator according to Claim 3, wherein [said]
the inner conductor comprises a plurality of helical lines.
5. (Amended) The [A] coaxial resonator according to Claim [1, 2] 3 or 4,
wherein [said] the outer conductor is formed by alternately laminating [thin-film]
conductor layers and [thin-film] dielectric layers.
6. (Amended) The [A] coaxial resonator according to Claim 5, wherein [the]
phase constants of lines for the [thin-film] conductor layers are substantially equal in [said]
the inner conductor and [said] the outer conductor.
7. (Amended) The [A] coaxial resonator according to Claim [1] 3, further
comprising a non-conducting element disposed between [said] the columnar element and
[said] the dielectric element.
8. (Amended) A filter comprising:
a plurality of coaxial resonators, each coaxial resonator comprising:

an inner conductor formed on an outer surface of a columnar element, wherein the inner conductor has a multi-layer electrode structure in which conductor layers and dielectric layers are alternately laminated and wherein an outermost conductor layer of the inner conductor is greater in thickness than the other conductor layers of the inner conductor;

a dielectric element having a hole formed therein, the columnar element being disposed in the hole; and

an outer conductor formed on an outer surface of [said] the dielectric element; and

an input/output device coupled to a predetermined coaxial resonator of [said] the plurality of coaxial resonators.

9. (Amended) A filter comprising:

a plurality of columnar elements, each columnar element having an inner conductor formed on an outer surface thereof, wherein the inner conductor has a multi-layer electrode structure in which conductor layers and dielectric layers are alternately laminated and wherein an outermost conductor layer of the inner conductor is greater in thickness than the other conductor layers of the inner conductor;

a dielectric element having a plurality of holes formed therein, a respective one of [said] the plurality of columnar elements being disposed in each [said] hole of the plurality of holes to form a plurality of corresponding coaxial [resonator] resonators; and

an input/output device coupled to a predetermined coaxial resonator of [said] the plurality of corresponding coaxial resonators.

10. (Amended) A duplexer comprising:

a transmission filter disposed between a transmission signal input port and a transmission/reception signal input/output port; and

a reception filter disposed between the transmission/reception signal input/output port and a reception signal output port,

wherein at least one of [said] the transmission filter and [said] the reception filter includes a plurality of coaxial resonators, each coaxial resonator comprising:

an inner conductor formed on an outer surface of a columnar element, wherein the inner conductor has a multi-layer electrode structure in which conductor layers and dielectric layers are alternately laminated and wherein an outermost conductor layer of the inner conductor is greater in thickness than the other conductor layers of the inner conductor;

a dielectric element having a hole formed therein, the columnar element being disposed in the hole; [and]

an outer conductor formed on an outer surface of [said] the dielectric element; and

an input/output device coupled to a predetermined coaxial resonator of [said] the plurality of coaxial resonators, [said] the input/output device being coupled to a corresponding one of [said] the ports.

11. (Amended) A communication device comprising:

a high-frequency circuit comprising a transmission circuit and a reception circuit;

and

a duplexer comprising:

a transmission filter disposed between a transmission signal input port and a transmission/reception signal input/output port; and

a reception filter disposed between the transmission/reception signal input/output port and a reception signal output port,

wherein at least one of [said] the transmission filter and [said] the reception filter includes a plurality of coaxial resonators, each coaxial resonator comprising:

an inner conductor formed on an outer surface of a columnar element, wherein the inner conductor has a multi-layer electrode structure in which conductor layers and dielectric layers are alternately laminated and

wherein an outermost conductor layer of the inner conductor is greater in thickness than the other conductor layers of the inner conductor;

a dielectric element having a hole formed therein, the columnar element being disposed in the hole; [and]

an outer conductor formed on an outer surface of [said] the dielectric element; and

an input/output device coupled to a predetermined coaxial resonator of [said] the plurality of coaxial resonators[, said input/output device being] and coupled to a corresponding one of [said] the ports.

12. (Amended) A communication device comprising:

a high-frequency circuit comprising at least one of a transmission circuit and a reception circuit, [said] the high-frequency circuit comprising:

a plurality of coaxial resonators, each coaxial resonator comprising:

an inner conductor formed on an outer surface of a columnar element, wherein the inner conductor has a multi-layer electrode structure in which conductor layers and dielectric layers are alternately laminated and wherein an outermost conductor layer of the inner conductor is greater in thickness than the other conductor layers of the inner conductor;

a dielectric element having a hole formed therein, the columnar element being disposed in the hole; [and]

an outer conductor formed on an outer surface of [said] the dielectric element; and

an input/output device coupled to a predetermined coaxial resonator of [said] the plurality of coaxial resonators.